

Process Performance Words of Wisdom

Dale Childs, Double Play Process Diagnostics
Paul Kimmerly, USMC-TSO Kansas City

Abstract. Process performance forms the cornerstone of the high-maturity concepts in the CMMI®. High maturity generates great discussion in the CMMI-based process improvement world. However, understanding process performance provides benefits to an organization whether or not it adopts the CMMI. The CMMI provides a framework for an organization's process improvement efforts. At its highest levels, the CMMI describes how an organization can use process performance measures to understand and improve its business processes. While this article will mention the high-maturity process areas from the CMMI, it will primarily focus on the analysis of process performance to help an organization. Comments from wise men and women throughout history illustrate ideas related to process performance. In one of his songs, Jimmy Buffett said, "Chasing illusions can get quite confusing."¹

This is true of the use of process performance measures. To understand how the use of process performance measures affect an organization, it is good to look back at some words of wisdom related to the concepts behind the use of performance measures and results. This article will illustrate the practical meaning and benefits of understanding process performance by drawing connections to famous quotes.

Setting the Foundation

Managers often struggle for a clear understanding of what is happening on their projects. They find themselves in the same situation as Alexandre Ledru-Rollin when he said, "There go my people. I must find out where they are going so that I can lead them."²

Good use of process performance data depends on establishing a foundation of measurement collection. In the CMMI, this starts with the Measurement and Analysis (MA) process area. In MA, an organization identifies its information needs and measurement objectives. Managers are always looking for information to help them answer questions like Mr. Ledru-Rollin. By starting with information needs, an organization can specify what is needed to answer some of those management questions. It is important to define those measures clearly so everyone is collecting the same data, the same way. Operational definitions of measures are critical to measurement success. For example, as a measure, a work hour can represent many things. An organization should define what it needs to collect. Is it a direct hour, an indirect hour, a billable hour or a support hour? By clearly defining each measure an organization sets itself up for more accurate and meaningful reporting. Care should be taken

to ensure that the data is collected accurately and analyzed appropriately. Managers should also communicate the results of the measurement activities back to the people collecting the measures. By doing so, the managers give the practitioners a stake in the measurements. The measures will mean more to the practitioners, which will lead to more accurate reporting. Without this communication, an organization ends up boxed in as Rowan D. Williams stated, "Bad human communication leaves us less room to grow."³

Measurement establishes the foundation that grows into the ability to use process performance data to help an organization improve. Inaccurate reporting stifles that growth.

Dwight D. Eisenhower said, "Things are more like they are now than they have ever been before."⁴

While that may seem obvious, in the world of process performance, it cannot be taken for granted. In order to know how things are now, an organization must measure the current state of its process performance and compare it to historical performance. Each of the high-maturity process areas in the CMMI contains practices that look at historical results, measure current performance, forecast future performance, and look to make improvements. As Philip Crosby said, "Making a wrong decision is understandable. Refusing to continually search for learning is not."⁵

Organizational Process Performance

As mentioned above, an organization establishes measurement goals based on information needs. As the organization accumulates historical measurement data, it can begin to predict process performance based on past results. In the Organizational Process Performance (OPP) process area in the CMMI, the organization refines those goals based on a statistical analysis of historical data and business needs for quality and process performance. This is important because as Douglass Lurtan pointed out, "When you determine what you want, you have made the most important decision of your life. You have to know what you want in order to attain it."⁶

A statistical analysis of historical data is necessary to validate these goals as attainable. Organizations should avoid setting goals like, "We want to be a world-class provider of choice." No one knows what that means, but it sounds cool. People relate to goals like, "We want to reduce customer found defects by 25% in the next year." Organizations should set goals that are clear, measureable, realistic, and easy to understand. After the organization sets its goals, it needs to identify which processes contribute to achieving those goals. Organizations should not reach for too much in analyzing processes. It takes time and money to perform quantitative analysis. Concentrate on those processes that are of concern or that provide the most insight into the achievement of business needs. There must be business reasons for choosing the processes for analysis.

To determine if they can attain what they want, an organization establishes process performance baselines to understand past performance and process performance models to predict future behavior. Keep in mind that these are just tools because as H. Thiel said, "Models are to be used, not believed."⁷

These tools give insight into process performance. A process performance baseline shows an organization its expected range

Report Documentation Page			Form Approved OMB No. 0704-0188		
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE AUG 2012	2. REPORT TYPE		3. DATES COVERED 00-00-2012 to 00-00-2012		
4. TITLE AND SUBTITLE Process Performance Words of Wisdom			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S)			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) United States Marine Corps Technology Services Organization, 4921 W. 72nd Street, Prairie Village, KS, 66208			8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT Process performance forms the cornerstone of the high-maturity concepts in the CMMI?. High maturity generates great discussion in the CMMIbased process improvement world. However, understanding process performance provides benefits to an organization whether or not it adopts the CMML. The CMMI provides a framework for an organization?s process improvement efforts. At its highest levels, the CMMI describes how an organization can use process performance measures to understand and improve its business processes. While this article will mention the high-maturity process areas from the CMML, it will primarily focus on the analysis of process performance to help an organization. Comments from wise men and women throughout history illustrate ideas related to process performance. In one of his songs, Jimmy Buffett said, ?Chasing illusions can get quite confusing.					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 4	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

of performance based on past performance. By knowing the expected range of performance, an organization understands whether or not a given process can meet its performance goals. Bertrand Russell said, “The degree of one’s emotion varies inversely with one’s knowledge of the facts—the less you know, the hotter you get.”⁸

Without the facts, managers can make reactive, emotional decisions. Such decisions often lead an organization down the wrong path. Understanding expected performance reduces emotional decisions by giving managers an objective view and reasonable performance expectations. Emotional reaction goes away and objective decision making becomes possible.

Process performance models allow an organization to explore the relationships between different pieces of their process. By using past performance to understand how the different parts of the process relate to one another, organizations can begin to predict what will happen in later parts of the process based on what happens in an earlier part of the process. This gives an organization understanding of what it can do, not just what it has done. John Wooden stressed, “Do not measure yourself by what you have accomplished, but by what you should have accomplished with your ability.”⁹

Process performance models enable managers to understand their ability, and understand when actual results vary from that ability. In the CMMI, process performance models start with a controllable factor, like project size, and create predictive models based on the understanding of the effects of changes to that factor. For example, an organization knows that a size increase of more than 10% during the design phase causes increases in test defect rates. Such knowledge can be used to determine if additional peer reviews or testers are needed to accommodate the size change and prevent a significant increase in test defects. Other models, while they may not be considered process performance models in CMMI terms can also help organizations understand and manage their projects. For example, if an organization knows that finding a higher than predicted rate of requirements review defects historically means a reduction in test and customer-found defects, it can anticipate performance results and make decisions related to those future lifecycle phases.

Quantitative Project Management (QPM)

In QPM, the project managers within the organization select the measures and techniques they will use to manage process performance. Sharon Salzberg stated, “Each decision we make, each action we take, is born out of intention.”¹⁰

In QPM, the measures and techniques used in the project are selected based on the objectives established in OPP and any unique aspects of the project. If there is no connection to the organization’s objectives, the organization goes back to chasing illusions or, as Bob Seger offered, “Working on mysteries without clues.”¹¹

Organizations should consider which items to include and which to leave out. Joshua Schachter said it well when he made the point, “Every decision has a cost. Do I make this decision at all or can I move on to the next thing? What we decided to leave out is almost as important as what we put in.”¹²

The baselines and models that an organization creates give insight into the quality and performance objectives set by the or-

ganization. As Confucius said, “The expectations of life depend on diligence; the mechanic that would perfect his work must first sharpen his tools.”¹³

Process performance baselines and models provide the tools, which an organization sharpens over time as it gains an understanding of its process performance. But, tools must be used. As Debra Wilson explains, “People who do not use the tools given to them only injure themselves.”¹⁴

If an organization does not make use of QPM tools, it loses an opportunity to meet business goals and improve performance. QPM is where projects use the models and baselines that are established in OPP to help manage their projects.

Process Performance and Decisions

Not every process is ripe for process performance measurement. An organization should concentrate on those that directly address business and performance objectives. Start with a small set and build from there. Once an organization understands its past results, other areas of opportunity present themselves. Organizations must start somewhere, because as Washington Irving said, “One of the greatest and simplest tools for learning more and growing is doing more.”¹⁵

When projects use the tools available to them, they gain insight and make better management decisions. When the actual performance, or prediction of performance, does not match expectations set by the baselines and models, managers should ask questions and take action.

Lee Iacocca said, “If I had to sum up in one word what makes a good manager, I would say decisiveness. You can use the fanciest computers to gather the numbers, but in the end you have to set a timetable and act.”¹⁶

Iacocca correctly contends that numbers are not answers. Numbers represent indicators that managers should use to ask questions that lead to better decisions. By establishing baselines and models, an organization sets its managers up to make decisions based on an understanding of process performance. Using our size example from earlier, if an organization knows that an increase in project size of more than 10% causes a corresponding increase in test defects, a manager can adjust staff levels or increase test time to allow for what it expects based on past performance.

Causal Analysis and Resolution

As Crosby pointed out in the earlier quote, organizations must continually learn by looking at their past mistakes and problems. That concept forms the basis for Causal Analysis and Resolution (CAR). Catherine Aird stated, “If you cannot be a good example, then you will just have to be a horrible warning.”¹⁷

Both good examples and horrible warnings should be looked at when selecting outcomes for analysis in CAR. When analyzing process performance, the organization should look at what has worked well in addition to what needs improvement. Successes should be leveraged across the organization and the root causes of problems should be resolved to prevent the recurrence of the problem. As Chuck Berry told us, “Do not let the same dog bite you twice.”¹⁸

Often organizations focus on symptoms rather than root

causes. Getting the right people in the room, which means those involved in the process, helps identify root causes of problems or successes. Organizations leverage their successes by analyzing the causes behind them just as they fix problems by analyzing the causes behind them. It may be true as Mark Twain said, "Few things are harder to put up with than the annoyance of a good example."¹⁹

However, successes can create peer pressure for others in an organization to improve. By using CAR, an organization can identify which annoying good examples are worth promulgating. On the flip side, it is also true that, "The best way to escape from a problem is to solve it,"²⁰ as Alan Saporita pointed out. CAR allows an organization to find root causes and prevent problems from recurring again and again and again and ...

Organizational Performance Management

Organizational Performance Management (OPM) asks an organization to select the improvements it wants to make and to put structure in place to deploy and analyze improvement proposals. The potential improvements can come from a variety of sources. One source is when a project's results historically show that they cannot reach performance goals. For example, if the goal is to be within 10% of estimates and the project is always 25% to 40% off, the project is unlikely to ever meet the goal without making a process change. Winston Churchill pointed to this when he said, "Success consists of going from failure to failure without loss of enthusiasm."²¹

However, that success only comes from making change. The results of a CAR discussion can also be the source for potential improvements. For CAR groups to be successful, an organization must provide feedback that shows the results are considered important and that the results are being used. As Colin Powell said, "The day soldiers stop bringing you their problems is the day you have stopped leading them. They have either lost confidence that you can help them or concluded that you do not care. Either case is a failure of leadership."²²

Another source comes from looking outside the organization for innovations. Organizations often become enamored with their own ideas and refuse to look outside of themselves. This is the trap Friedrich Nietzsche spoke of when he said, "Many are stubborn in pursuit of the path they have chosen, few in pursuit of the goal."²³

All available information and sources, internal and external to the organization should be used to support improvement initiatives. Jimmy Buffett summed this up when he told us, "I have read dozens of books about heroes and crooks, and I have learned much from both of their styles."²⁴

Business goals should drive organizational improvements. Outside ideas can be just as valid as those that come from within.

Validation plays an important role in OPM. There are several ways to validate if an improvement is successful. These include piloting changes, modeling behavior and simulating results. To the extent possible, improvements driven by process changes should be validated statistically to ensure that observed changes are not random. In other words, a quantitative look should be taken to ensure that a significant change has occurred. This prevents the pitfall that Mr. Spock addressed when he said, "A difference that makes no difference is no difference."²⁵

Whatever method is chosen, organizations must find project managers willing to take the first steps in trying out new improvements. They should be willing to follow Frank Zappa's words, "I will do the stupid thing first and then you shy people follow."²⁶

Improvement proposals do not always work. An organization should not try to force an idea because it seems like it should work. Use the validation results to determine if the change is worth adopting. W.C. Fields explained that by saying, "If at first you do not succeed, try, try again. Then quit. There is no use being a damned fool about it."²⁷

However, if the organization determines that the improvement was a success, then a plan should be put in place to deploy it.

Using Process Performance Measures to Manage Change

All improvements require change. Ideas may be easily understood and accepted, but change always comes hard. Charles Kettering explained, "The world hates change, yet it is the only thing that has brought progress."²⁸

While change is critical for improvement, change must be managed. Changes deployed to the organization should be as timely as possible, but accomplished in an orderly fashion. As John Wooden told his teams, "Be quick, but do not hurry."²⁹

Unmanaged change creates chaos, but managed change brings benefits. As Francis Bacon pointed out, "Things alter for the worse spontaneously, if they are not altered for the best designedly."³⁰

Organizations have to deal with unplanned, spontaneous change. Managed change is easier to accept and sets the foundation for future improvement.

Using process performance measures greatly aids an organization in making improvements. However, organizations should not blindly follow the numbers. Numbers can be manipulated as Mark Twain said, "Get your facts first, and then you can distort them as much as you please."³¹

As stated previously, numbers are just indicators. To create useful indicators, organizations should clearly define the analysis techniques that will be used and the rationale for using them. Organizations must never lose sight of the fact that the perception of the staff is just as important as the numbers. George Santayana explained, "Those who speak most of progress measure it by quantity and not by quality."³²

Both the hard numbers and soft perceptions determine the success of any improvement effort. If the numbers look good, but the people have legitimate reasons for objection, the organization must consider their viewpoint. Malcolm Gladwell said it well when he explained the need for balance, "Truly successful decision making relies on a balance between deliberate and instinctive thinking."³³

Organizations collect a lot of numbers, but real value comes when they are used. Establishing a measurement foundation enables the use of process performance measures once an organization builds some historical data. The high-maturity process areas in the CMMI provide guidance on how quantitative information and process performance measures can be used to help an organization meet its business goals. Remember as Hesiod stated around 800 BC, "Observe due measure, for right timing is in all things the most important."³⁴

The time is now for building a measurement program with the vision for how performance measures will be used. Understanding process performance can be perplexing. Others weathered the storms of change in the past. In order to plan for the future of process improvements and make meaningful change, organizations should consider words of wisdom from those who came before us. ♦

Disclaimer:

CMMI® is registered in the U.S. Patent and Trademark Office by Carnegie Mellon University.

ABOUT THE AUTHORS



Dale Childs is a certified CMMI High Maturity Lead Appraiser, a certified CMMI instructor, a certified Lean Six Sigma Green Belt, and a trained Malcolm Baldrige National Quality Award examiner. Dale is an SEI affiliate and the CEO of Double Play Process Diagnostics, Inc. Mr. Childs retired from the DoD in 2008. While at the DoD he was responsible for coordinating his agency's CMMI efforts. Dale is the 2011 recipient of the SEI's Member Representative Award. Mr. Childs' efforts are currently focused on working with organizations pursuing CMMI high maturity and business growth.

Double Play Process Diagnostics Inc.
P.O. Box 17015

Pensacola, FL 32522

Phone: 850-450-5626

E-mail: dale.childs@doubleplayconsulting.com



Paul Kimmerly has nearly 25 years experience in software development for the different incarnations of the United States Marine Corps Technology Services Organization. He recently retired from full-time employment, but remains in a consulting role. He was a member of the organization's Software Engineering Process Group for 18 years, serving as the group's lead for more than 15 years. Paul is a certified HMLA and CMMI instructor for the CMMI for Development and the CMMI for Acquisition. He is an SEI affiliate and a member of CROSSTALK's editorial board. He has presented at past SEPG conferences and contributed several articles on process improvement to CrossTalk. In addition to his part-time duties with the USMC TSO, he works with private clients through Double Play Process Diagnostics Inc.

4921 W. 72nd Street

Prairie Village, KS 66208

E-mail: paul.kimmerly@mcw.usmc.mil
or pjkimmerly@kcnet.com

REFERENCES

1. Written by Jimmy Buffett, *The Legend of Norman Paperman*, Don't Stop the Carnival, Island, 1998
2. Alexandre Ledru-Rollin, Suzy Platt, ed. *Respectfully quoted: a dictionary of quotations* (Barnes & Noble, 1993), p. 194
3. Rowan D. Williams. (n.d.). BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
4. Dwight D. Eisenhower. (n.d.). BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
5. Philip Crosby, *Philip Crosby's Reflections on Quality: 295 Inspirations from the World's Foremost Quality Guru*, McGraw-Hill, September 1, 1995
6. Douglass Lurtan, Quotationsbook.com, retrieved September 28, 2011, from quotationsbook.com
7. Henri Thiel, Famousquotes.com, retrieved September 28, 2011, from famousquotes.com
8. Russell, Bertrand, BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
9. Wooden, John, BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
10. Sharon Salzberg, *O Magazine*, *The Power of Intention*, January 2004
11. Written by Bob Seger, *Night Moves*, Night Moves, Capitol, 1976
12. Schachter. quotationspage.com. Retrieved September 28, 2011, from quotationspage.com
13. Confucius. BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
14. Wilson, Debra. BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
15. Irving, Washington, BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
16. Iococca, Lee, quotationspage.com. Retrieved September 28, 2011, from quotationspage.com
17. Aird, Catherine, quotesdaddy.com. Retrieved September 28, 2011, from quotesdaddy.com
18. Berry, Chuck. searchquotes.com. Retrieved September 28, 2011, from searchquotes.com
19. Twain, Mark. BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
20. Saporta, Alan. Quotationspage.com. Retrieved September 28, 2011, from quotationspage.com
21. Churchill, Winston. BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
22. Powell, Colin. . Quotationspage.com. Retrieved September 28, 2011, from quotationspage.com
23. Nietzsche, Friedrich. BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
24. Written by Jimmy Buffett. *Son of a Son of a Sailor*, *Son of a Son of a Sailor*, MCA, 1978
25. Blish, James. *Spock Must Die*, Spectra, March 1, 1985
26. Written by Frank Zappa. *Don't Eat the Yellow Snow*, Apostrophe, Zappa Records, 1974
27. Fields, W.C., BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
28. Kettering, Charles. BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
29. Wooden, John. goodreads.com. Retrieved September 28, 2011, from goodreads.com
30. Bacon, Francis. BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
31. Twain, Mark. BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com
32. Santayana, George. Quotationspage.com. Retrieved September 28, 2011, from quotationspage.com
33. Gladwell, Malcolm. Quotationspage.com. Retrieved September 28, 2011, from quotationspage.com
34. Hesiod. . BrainyQuote.com. Retrieved September 28, 2011, from BrainyQuote.com